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PENTAGON INCREASE SAFER AFTER PROJECTIONS

Washington—A recent Office of Management and Budget/ Congressional Budget Office Fiscal "snapshot" of revenues in 1987 projects a maximum deficit of $144 billion, perfectly in line with Gramm-Rudman limits. If the OMB/CBO deficit figure is accurate, the $311.6-billion Defense Department request will provide for 3% growth in real terms above the $289.5 billion approved in conference.

Congress, however, is already eyeing Pentagon spending reductions of approximately $41 billion in fiscal 1987, planning to distribute these funds among domestic spending programs.

HASC GROOMING LIBERALS

Washington—A House Armed Services Committee initiative is aimed at pulling liberal Democratic members onboard a special Defense Dept. panel on procurement reform as advisors.

The Armed Services Committee chairman, Rep. Les Aspin (D., Wisc.), is forming the procurement reform panel to involve directly in the authorization process members who are part of the House Military Reform Caucus.

The effort by Rep. Aspin is to pull together both liberal reform caucus members with more moderate House Democrats interested in improving Pentagon procurement programs to determine action that is required to streamline the process.

Some recommendations are expected from the panel during the fiscal 1987 Defense Authorization Bill. This could serve to ease possible later floor action by caucus members, since they will have had their views heard during committee action. Although later floor action is not precluded by panel members, having early input in the authorization process could assuage complaints over the bill that reaches the floor.

SOVIETS ADVANCE STEALTH FIGHTER TECHNOLOGY

Washington--Sharp-resolution U.S. electronic reconnaissance satellites have discovered in the Soviet Union an aircraft on the ground that some intelligence analysts believe is a prototype design stealth fighter.

The discovery comes at a time when the Air Force has operational only one of three 24-aircraft stealth fighter squadrons based at Tonopah, Nev. These Lockheed special mission aircraft are designed to absorb the signal from enemy radars instead of reflecting it so that it becomes more difficult to track the stealth fighter.

The Soviet Union has for the last five years or more been involved in focusing its technology on developing the capability to reduce the radar cross section of its fighters, providing absorbent coatings to reduce the radar signature.

But it is a combination of coatings, materials and aerodynamic shaping that blend together with other factors such as reducing electronic emissions and electronic countermeasures that make stealth technology effective.

The newly discovered USSR fighter is believed to combine some of these features such as materials and shaping to make it more effective than some aircraft already in the Soviet inventory that have reduced radar signatures.

The Tupolev Tu-95 Bear H bomber has been operating with sections of material appended to areas of the fuselage that effectively fail to provide a return radar signature sufficient to enable tracking and aircraft using the same materials as structural members. Skin tracking this material on a fighter would be more difficult if using certain types of ground-based and airborne radar-guided weapons.

For some time, the U.S. has known that the newer Sukhoi Su-27 Flanker and the Mikoyan MiG-29 and MiG-31 fighters operated with radarabsorbent coating that significantly reduce their radar signatures. These fighters also are equipped with long-range look-down radars and the latest electronic counter-measures equipment. The MiG-31 has the capability to track multiple targets while the radar scans the horizon.

The USAF/Lockheed stealth fighter program, once known as Senior Prom, provides a fighter approximately the size and vaguely resembling the shape of the Navy/McDonnell Douglas F-18 aircraft.

Each of the USAF stealth fighters costs approximately $60 million, and the aircraft is not designed to sustain more than 4-G turns. It is designed to attack high value targets and air defense missile radar sites with bombs.

Plates called facelets cover the USAF stealth fighter aircraft, giving it the appearance of an armadillo. These plates absorb the beam from a radar, reducing the return signal.

USAF's Advanced Tactical Fighter program is designed to provide a second-generation stealth fighter that can withstand loads up to 9G, and to open up the performance envelope for stealth technology, especially with long-range stand-off weapons. But the Air Force has consistantly delayed the initial operational capability of the ATF, with that date now scheduled for 1995.

Seven major aerospace companies are competing for the advanced fighter design. Lockheed, Northrop, General Dynamics, Rockwell International, Vought Corp., Boeing and McDonnell Douglas are competing on an 18-month concept definition phase with the design goal of an approximately 55,000-lb. gross takeoff weight aircraft that will cost about $35 million each.

Concepts for the aircraft's design were submitted by the contractors to USAF's Wright-Patterson AFB, Ohio several months ago and are being considered for the next phase of competition--the demonstration and validation phase.

The Air Force expected to select as many as four companies to continue into the next phase, but reductions in program funding is expected to cause the service to continue with only two competitve contractors. Some of the other competitors are expected to team with the winning companies in determining cost, stealth and aerial performance tradeoffs in the designs before a production deci-

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SOVIET STEALTH *(continued)*

sion is required. The readoffs are expected to include supersonic cruise capability, short takeoff and landing with agility and a new weapons suite while adhering to the cost goal.

The Soviet Union is involved in stealth technology development that includes:

- Aircraft skin materials--composites, coatings, and the capabilty to absorb and retransmit a radar signal in another direction. This technology by the USSR operates within the atmosphere in the infrared wavelength at 14-18 microns.
- Cavities--radome, canopy, and engine intakes. Canopy coatings and radome materials have been detected with stealth qualities, and the intake design on the MiG-31 drastically reduces the reflectivity to radar.
- Engine--exhaust, noise reduction, heat and chemical signatures. The engine exhaust has been shrouded on some fighters in the infrared wavelength at 3-5 microns, and fuel additives are being used to help reduce the chemical signature from the engine.
- External stores--fuel tank, weapons and ecm pods. Stores are being designed with a reduced signature.
- Electronic leakage--supression of signatures. All subsystems are being designed with reduced signatures in servo actuators, flight controls, communications, and electronic counter countermeasures gear.
- Communications--infrared, frequency hopping, spread spectrum, and low probability of intercept. These technologies are being designed onto USSR subsystems. Laser diode systems also have been tested that can be used for aicraft-to-aircraft communications.
- Radar--Bistatic space and ground transmitters. This capability has been developed and can be operated with a signal transmitted from space-based or ground-based equipment with receivers on aircraft.
- Single versus dual aircraft versus other target acquisition--one aircraft can detect and track targets while vectoring another so the second can remain passive until engagement.

SATELLITE-DETECTING SENSORS DEVELOPED

Berkley—Two new cameras that can detect ultraviolet radiation from missiles and take infrared photographs of Soviet satellites have been developed at the University of California-Berkeley's Space Sciences Laboratory.

The ultraviolet camera was completed in December and was shipped to National Aeronautics and Space Administraton this month for use with the joint U.S.-French Faust telescope in the Earth Observation Mission 1 space shuttle now scheduled for August.

Besides the Faust work, the camera could have strategic defense applications because it can find UV emissions from missiles. UV radiation leaves a much smaller signature than other energy emissions and gives a more precise location of the hard body.

The infrared camera developed here has already been used to photograph several Soviet satellites from the Air Force Maui Optical Site on Haleakala mountain on the Hawaiian island of Maui.

CHALLENGER LOSS HITS NASA PLANS

Washington— The loss of the shuttle Challenger throws into confusion the entire budget of the nation's space program—already complicated by the Gramm-Rudman Act.

Top officials of the National Aeronautics and Space Administration say it will be weeks, if not months, before they have a final assessment of how the Challenger tragedy Jan. 28 will affect not only the shuttle program but also other major projects.

Until the accident, NASA officials were confident their major interests—such as the space station and a fleet of transatmospheric vehicles—would fare relatively well despite the prospect of government-wide cuts under Gramm-Rudman.

Now the agency has to contend with a possible loss of some public support that could result in tougher scrutiny by both Congress and the White House, which in the past has been an enthusiastic backer of space programs. The biggest question is how to proceed with the shuttle effort, and how much money will be needed to proceed safely with future missions.

NASA officials before Jan. 28 were confident they would be able to plan for the final three fiscal years of the Reagan Administration on about the $7.6-billion-a-year level of the current budget.

One major decision pending is whether to build another shuttle to replace Challenger and return the program eventually to a semblance of the schedule overturned by the accident. Until the tragedy, officials had considered such construction unlikely.

NASA's quandary also may unravel plans—at least for the next few months—for orderly progress on other big projects, including:

- Second-generation shuttle. Early plans are being considered for a refined new shuttle—described as "still a truck" that will probably be a single-stage-to-orbit system. It would be relatively cheap to operate, perhaps costing a few hundred dollars a pound. A small fleet, to be built in the 1990s, would likely cost 20 to 30 billion dollars.
- Heavy lifter shuttle. Using mainly existing technology, NASA and the Pentagon may build a giant shuttle that could lift 250,000 pounds, compared with about 65,000 pounds now.
- Transatmospheric vehicles. A fleet of bomber-sized craft would be designed to take off from runways, accelerate with ramjet engines to speeds of up to mach 10 and proceed into orbit. They could be built in the 1990s.

  A fleet of about six to 12 TAVs could cost 20 to 25 billion dollars. Operating costs would be comparatively low, it would be much more flexible than the shuttle—especially for military missions—and technology now makes this project feasible.

  After military tests, a commercial transatmospheric craft could be flying in about 2010, reducing flying time between the West Coast and Asia to less than an hour.
- Space station. To be built in the early 1990s, this orbiting factory-laboratory-observation platform probably will spawn an array of small stations that could be used for purposes such as manufacturing exotic materials in weightlessness, advancing Strategic Defense Initiative projects, and serving as a staging base for future missions to the moon and Mars.

NASA officials say the manned mission to Mars is "on the back burner." A decision on whether to proceed with such a project will probably not be made until the early 1990s unless, says a top space executive, "Reagan and Gorbachev decide at the summit talks to undertake a big space project like this. Such things have happened in the past."

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